JUNE 2000

COEUR d'ALENE TROUT PRODUCTION FACILITY PROJECT

Preliminary Environmental Assessment
DOE/EA-1275

BONNEVILLE
POWER ADMINISTRATION

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Chapter 1 - Purpose of and Need for Action

1.1 Underlying Need for Action

Development of the hydropower system in the Columbia River Basin has had far-reaching effects on many species of fish and wildlife. The Bonneville Power Administration (BPA) is responsible for protecting, mitigating, and enhancing fish and wildlife affected by the development, operation, and management of Federal hydroelectric facilities on the Columbia River and its tributaries. See Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), 16 U.S.C. 839 et seq., Section 4.(h)(10)(A). In addition, BPA is responsible for protecting and conserving species listed as threatened or endangered under the Endangered Species Act (ESA) of 1973, as amended 16 U.S.C. 1531 et seq.

Fish resources are important to the cultural heritage of the Coeur d'Alene Tribe (CDA). Anadromous and resident salmonids were a critical component of the Tribe's annual subsistence requirement. Fish passage was curtailed with the construction of Monroe Street and Little Falls dams on the Spokane River and Chief Joseph and Grand Coulee dams on the Columbia River and eventually resulted in total losses of anadromous salmon in the Spokane River drainage. These actions forced the CDA to rely on resident fish resources of Lake Coeur d'Alene. Based on historic records, catch for the lake was estimated to be as high as 42,000 cutthroat trout annually (Scholz et al. 1985). By 1967, however, annual tribal harvest was substantially reduced below an estimated 3,300 cutthroat trout. In recent years, further population declines have resulted in the implementation of additional restrictions on tribal harvest of cutthroat trout. The CDA is hoping to restore cutthroat trout populations in four target tributaries such that a total of 42,289 adults are available to meet harvest and natural escapement objectives.

In 1994, the Northwest Power Planning Council (Council) recommended that BPA fund CDA proposals to improve their reservation fishery, including the design, construction, and operation of a trout production facility. Since 1995, the Tribe's efforts have focused on development of a multifaceted, long-term fisheries enhancement plan. In addition to the hatchery, the plan calls for extensive habitat restoration and public education programs.

1.2 Purposes

The BPA will base its choice among the alternatives on the following purposes for participating in this project. These purposes include:

- Consistency with the Council's Fish and Wildlife Program;
- Administrative efficiency and cost-effectiveness;

- Avoidance or minimization of adverse environmental impacts;

- Complement activities of fish and wildlife agencies and appropriate tribes;

- Maintain consistency with the legal rights of the CDA and appropriate tribes in the region;

- Increase native westslope cutthroat trout populations to sustainable and harvestable population levels by the year 2016, with limited harvest beginning in 2012;

- Provide an alternative rainbow trout resource for harvest, to protect weak native fish stocks; and

- Compliance with BPA statutory laws and regulations (Northwest Power Act).

1.3 Project Participants

The CDA has proposed a tribal hatchery program to mitigate for anadromous fish losses and to enhance fishing activities on the reservation. BPA is proposing to fund construction of the hatchery and associated facilities. Idaho Department of Fish and Game (IDFG) and the U.S. Fish and Wildlife Service (USFWS) are cooperators and participants on the CDA hatchery Interdisciplinary Team (ID Team). In addition, the USFWS has the responsibility to regulate ESA activities for listed species in the project area. The Bureau of Indian Affairs is a cooperator on the project.

1.4 Decisions to be Made

The ultimate decision to be made by BPA is whether to fund the proposed hatchery development and supplementation program or whether to adopt one of the other two alternatives presented in this document. The possible decisions include:

- Selection of the no action alternative, thereby maintaining current fisheries management practices;

- Adoption of the proposed alternative, including hatchery and acclimation pond development and hatchery production of westslope cutthroat trout and rainbow trout; and

- Adoption of the Cutthroat Trout Only Hatchery alternative, including hatchery and acclimation pond development and hatchery production of only westslope cutthroat trout.

As required by National Environmental Policy Act (NEPA) procedures, BPA must examine the environmental effects of all of the alternatives, as analyzed in this Environmental Assessment (EA) document, and identify the preferred alternative. For the preferred alternative, BPA must determine whether the potential effects of implementation are significant as defined in the NEPA regulations. If they are determined not to be significant, a Finding of No Significant Impact would be issued and the preferred alternative would move forward. If the effects are deemed significant, an Environmental Impact Statement must be prepared before making a decision to proceed.

1.5 Scoping Issues

Scoping was accomplished for this EA through several routes. Comments on potential environmental issues were raised by members of the ID team, composed of representatives of state and federal natural resource agencies, as well as from the Council's artificial production review process. In addition, BPA conducted public scoping from February to March 2000. The following bulleted items indicate the issues or questions that were raised and where the appropriate responses can be located within this EA.

- Does the proposed program impose significant genetic risk to existing distinct populations of native westslope cutthroat trout? Can the genetic risk be reduced? Response: The issue of genetic risk is addressed in Section 3.2.1.1.

- Is the habitat capability in target streams sufficient to complement the proposed artificial production program? Response: See section 3.2.1.2.

- Should the proposed action be delayed until there is a comprehensive subbasin planning process in place? Response: See section 3.2.1.3.

- How might a listing of westslope cutthroat trout affect the proposed action? Response: See section 3.2.1.2.

- Is it reasonable to expect that the mixed stock fishery in Coeur d'Alene Lake would not increase? Response: See section 3.2.1.3.

- Will the proposed facility result in impacts to local water quantity and quality? Response: Actions would be taken to minimize impacts on water quantity. Hatchery effluent discharge would be in accordance with state and federal permit regulations. See section 3.2.2 for details.

- Will construction of the hatchery facility and acclimation ponds result in impacts to wetlands? Response: J-U-B engineers completed A wetland delineation in the spring of 2,000. An approximate total of 0.7 acres of wetland were identified for the entire project area. J-U-B Engineers Inc will conduct regulatory permitting associated with wetlands. An artificial wetland would be constructed at the hatchery site to assist with reconditioning of wastewater. See section 3.2.2.3.

- Are there cultural resource concerns at the proposed construction sites? Response: A cultural resources survey of the proposed project area has been conducted and no culturally significant resources were identified. See section 3.2.2.7.

- Are there public safety issues associated with the hatchery raceways and acclimation ponds? Are there public safety issues associated with hazardous material and waste storage? Response: See section 3.2.2.7 for detailed description of actions taken to minimize public safety hazards.

- What are the impacts to native fishes from releases of hatchery-reared cutthroat trout? Response: See section 3.2.1.2.

- What are the noise/disturbance impacts from construction and operations of the hatchery and acclimation ponds? Response: See section 3.2.2.7.

- Will there be visual/aesthetic impacts to the landscape? Response: See section 3.2.2.7.

- Will there be land use or zoning changes resulting from construction of the hatchery and acclimation ponds? Response: See section 3.2.2.7.

- Will ESA listed species be impacted by the proposed hatchery program? Response: The CDA will prepare a Biological Assessment (BA) to analyze the impact of the proposed hatchery facility on all listed and proposed species. See sections 3.2.1.2, 3.2.2.3, and 4.2 for additional information.

- What are the land use and socioeconomic impacts associated with the proposed hatchery program? Response: See section 3.2.2.7.

- Will there be any impacts to recreational activities? Response: It is anticipated that the proposed hatchery program would positively enhance recreational activities by providing trout for recreational harvest, a hatchery interpretive center, and restoration of fish runs to reservation tributaries to be enjoyed by recreational users. See section 3.2.2.7.

- Will there be any air quality impacts resulting from operation of the hatchery facility? Response: Hatchery and acclimation facilities would operate well within established limits for air quality standards and thus no impacts are anticipated. See section 3.2.2.6.

Chapter 2 - Proposed Action and Alternatives

2.1 Proposed Action

The BPA proposes to fund construction of a supplementation hatchery facility for the CDA. The facility would include a hatchery building, rearing ponds, four satellite acclimation facilities, as well as four groundwater wells, one stream water intake, and associated pipelines (Figure 1). The proposed hatchery facilities, groundwater wells, and acclimation ponds would be primarily located in or near the floodplains associated with Rock Creek, Alder Creek, Lake Creek, Benewah Creek, and Evans Creek (exact locations have not been determined). One of the groundwater wells would be located on the hatchery grounds and the other 2-3 wells would be sited on private lands currently used for agriculture (exact location have yet to be determined). The pipelines would span through the private holdings and follow along a railroad right-of-way or along a road leading to the hatchery facility.

The CDA plan to use the hatchery facility for the rearing and spawning of approximately 800 cutthroat trout for broodstock and rearing of 100,000 fingerling cutthroat trout for supplementation of adfluvial populations located in reservation streams. An additional 10,000 resident rainbow trout would be reared from eggs to plantable size for a put-and-take trout fishery. The proposed hatchery design (Figures 2) incorporates a 95 percent water reuse system and state of the art technology including chillers, ozonators, ultra-violet and biological filters.

The proposed hatchery program would be operated as a captive rearing facility. One hundred to 200 juvenile cutthroat trout would be collected annually from each of four target tributaries. The juveniles would be transported to the hatchery and isolated for a quarantine period. They would then be placed in raceways. The raceways would contain multiple year classes of separate tributary populations. As the trout become reproductively mature they would be moved to isolated broodstock tanks. The goal is to successfully rear sufficient numbers of juveniles to produce approximately 800 adults for broodstock, 200 adults per tributary population.

The broodstock would be spawned and offspring reared at the hatchery. In the springtime, at a size of approximately 6 cm (4 in), hatchery-reared juveniles would be transported to acclimation ponds sited adjacent to the stream of their parents origin. Juvenile trout would be held in these stream-fed acclimation ponds for an undefined period. Their release into the streams would be volitional.

Rainbow trout embryos would be purchased and transported to the hatchery for incubation and rearing. Fry would be ponded directly into earthen rearing ponds. Once the trout reach a harvestable size, they would then be transported and released into isolated catch-out ponds. Four catch-out are planned; one has already been constructed and is providing a limited rainbow trout fishery.

The hatchery supplementation program is just one component of a larger reservation fishery enhancement program that was adopted by the Council in 1994. Additional actions included in this program are habitat restoration and enhancement measures in Lake, Benewah, Evans, and Alder creeks, the purchase of critical watershed areas for protection of fisheries habitat and conducting an educational/outreach program within the CDA reservation to develop a holistic watershed protection process. In addition, the rainbow trout reared as part of this alternative provide for an interim fishery for tribal and non-tribal members of the reservation while populations of cutthroat trout are recovering. By increasing the numbers of adult cutthroat trout returning to spawn in target tributaries, this alternative should support the CDA goal of achieving self-sustaining, harvestable cutthroat populations and should produce hatchery westslope cutthroat for harvest within an estimated 10-15 years.

2.2 Cutthroat Trout Only Hatchery Alternative

Under this alternative, BPA would still propose to fund construction of a supplementation hatchery facility for the CDA for cutthroat trout only. The facility would include a hatchery building, rearing ponds, four satellite acclimation facilities, as well as four ground water wells, one stream water intake, and associated pipelines. The proposed locations would be identical to those explained above in section 2.1.

The CDA would use the hatchery facility for rearing and spawning of 2,000 cutthroat trout for broodstock and rearing of 100,000 fingerling cutthroat trout for supplementation of adfluvial populations located in reservation streams. The hatchery program would operate as described for westslope cutthroat trout under the Tribal Alternative. Rainbow trout necessary for a put-and-take trout fishery would be purchased at a fishable size instead of being raised at the hatchery as proposed under the Tribal Alternative. Approximately 7,800 lbs of rainbow trout would need to be purchased at an estimated cost of $1.75/lb. The total cost of purchasing rainbow trout would be approximately $13,600 annually.

The hatchery supplementation program is just one component of a larger reservation fishery enhancement program that was adopted by the Council in 1994. Additional actions included in this program are habitat restoration and enhancement measures in Lake, Benewah, Evans, and Alder creeks, the purchase of critical watershed areas for protection of fisheries habitat and conducting an educational/outreach program within the CDA reservation to develop a holistic watershed protection process. In addition, the rainbow trout purchased as part of this alternative provide for an interim fishery for tribal and non-tribal members of the reservation while populations of cutthroat trout are recovering. This alternative would support the CDA goal for self-sustaining, harvestable cutthroat populations to be achieved

This alternative is designed to reduce the risk of disease associated with rearing rainbow trout on hatchery grounds. In addition, it would be expected to reduce the construction and annual operations costs associated with the new hatchery facility. Estimated costs

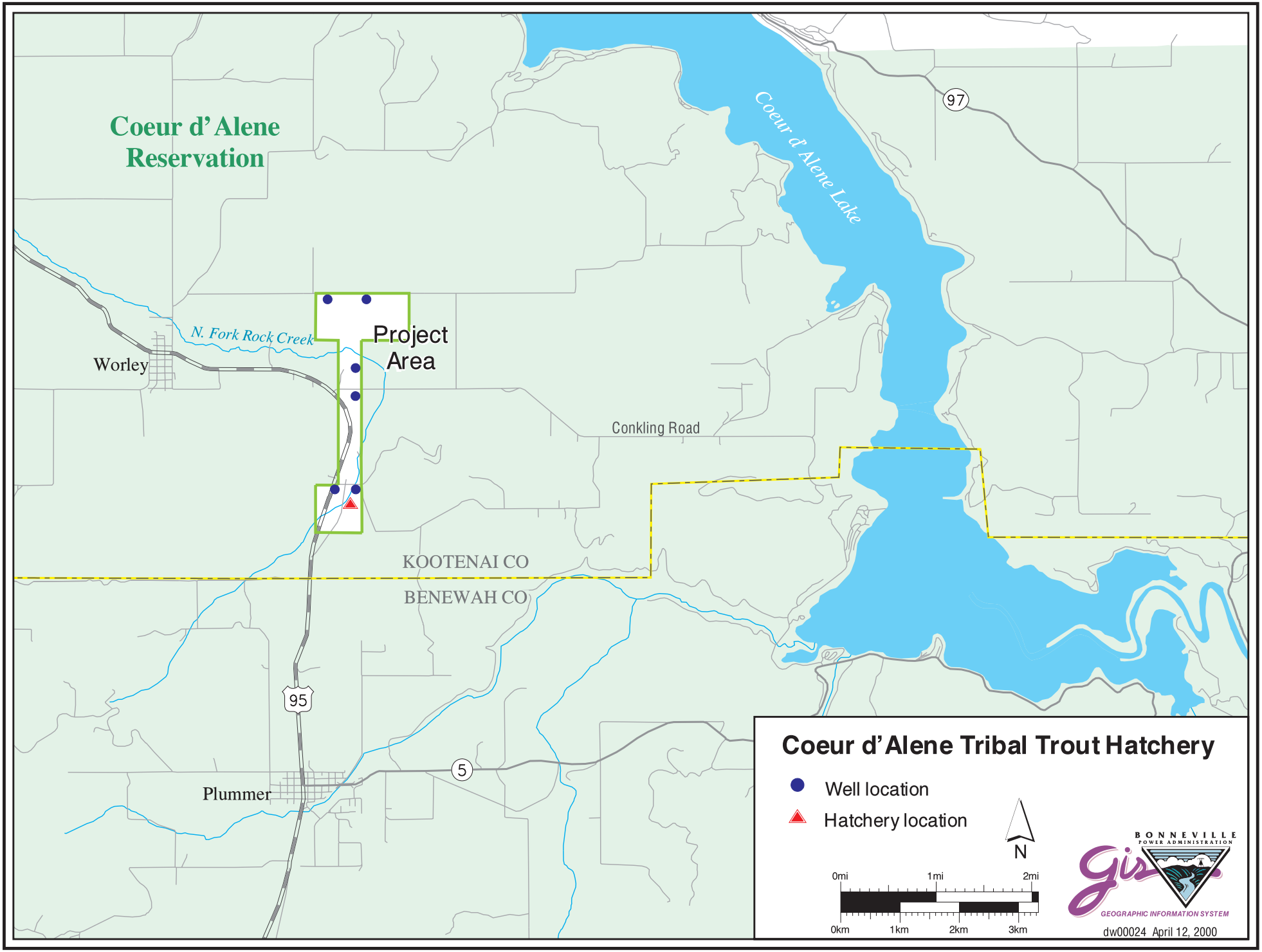
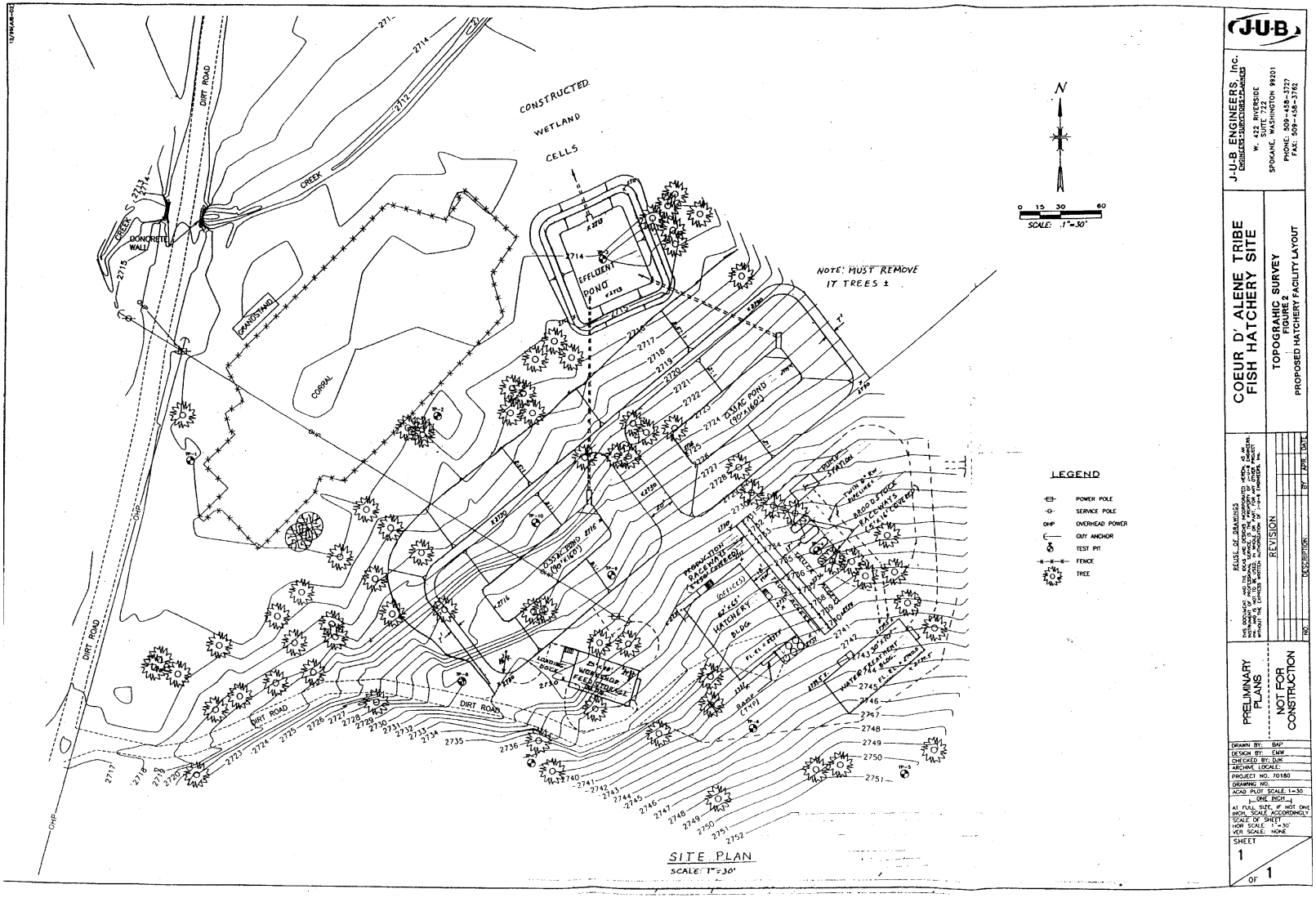

Coeur d'Alene Reservation
Coeur d'Alene Lake
97
N. Fork Rock Creek
Project Area
Worley
Conkling Road
KOOTENAI CO
BENEWAH CO
95
5
Plummer
Coeur d'Alene Tribal Trout Hatchery
Well location
Hatchery location
N
0mi
1mi
2mi
0km
1km
2km
3km
BONNEVILLE POWER ADMINISTRATION
GEOGRAPHIC INFORMATION SYSTEM
dw00024 April 12, 2000

Figure 2. Hatchery Layout



savings are expected to be minimal with respect to capital outlay but should be more substantial when annual operations and maintenance costs are considered. Annual estimated operation and maintenance savings should be approximately $12,000 considering trout feed, labor, overhead, maintenance, and estimated costs of purchasing rainbow trout.

2.3 No Action Alternative

The No Action Alternative would eliminate the hatchery supplementation effort and the put-and-take rainbow trout fishery objectives from the Resident Fisheries Enhancement Program, but would include ongoing activities currently funded by BPA. The remaining program objectives include habitat restoration and enhancement in Lake, Benewah, Evans, and Alder creeks, purchase of critical watershed areas for protection of fisheries habitat, and implementation of an educational/outreach program for the general public within the CDA reservation to develop a holistic watershed protection process.

CDA reservation cutthroat trout populations are considered at least moderately damaged (Peters et al. 1998). Recent average spawning escapements fall between minimum viable population size and the number of adults needed to produce 50 percent of the carrying capacity of natal streams (Peters et al. 1999). By improving habitat conditions and educating the reservation public about the importance of watershed functioning, these objectives should provide some benefit to local cutthroat and bull trout populations. However, there are critical uncertainties associated with the ability of these habitat enhancement and educational activities to recover native trout populations. Limiting factors identified for the basin include degraded water quality and competition with introduced species in Coeur d'Alene Lake (Peters et al. 1999). If these limiting factors in the lake are not rectified, and losses due to these factors are not compensated for, native populations would not be expected to recover.

Even if native populations were to respond positively to ongoing habitat enhancement and educational activities, it is uncertain how many generations would be required before population increases would be detectable. In addition, habitat enhancement and public outreach alone would not provide for a compensatory harvest opportunity providing an interim trout fishery for tribal members. If the No Action Alternative is taken, the CDA goal for self-sustaining, harvestable cutthroat trout populations may not be achieved for many generations.

2.4 Alternatives Considered but Eliminated from Study

An alternative to site the tribal hatchery program in an existing IDFG facility was proposed and given preliminary consideration. This alternative did not alleviate any environmental concern associated with the proposed alternative and thus, was not deemed necessary to be include in the analysis. In addition, there would be genetic risks to native cutthroat trout populations and disease transmission risks associated with out-of–basin rearing. These risks resulted in elimination of this proposal from further consideration.

Table 1. Predicted Performance Summary

Alternatives			
Purposes	**Proposed Action**	**Cutthroat Only Alternative**	**No Action**
Consistency with the Northwest Power Planning Council's Fish and Wildlife Program	Yes	Yes	Only partially, would not address hatchery.
Achieves costs and administrative efficiency for BPA mitigation	Highest overall costs to BPA approximately $2.8M.	Reduces costs by approximately $12,000 annually when compared to proposed alternative.	No additional costs. Only costs associated with ongoing Habitat Enhancement Program.
Increase native cutthroat levels to sustainable and harvestable levels by 2016, including limited harvest capabilities by 2012.	A successful hatchery program would be expected to produce harvestable numbers of trout within the projected timeline. Sustainable populations will also be dependent upon addressing limiting factors in the habitat including Coeur d'Alene Lake.	A successful hatchery program would be expected to produce harvestable numbers of trout within the projected timeline. Sustainable populations will also be dependent upon addressing limiting factors in the habitat including Coeur d'Alene Lake.	Although ongoing habitat restoration activities would be maintained with this alternative, they are probably not sufficient to achieve this purpose.
Provide an alternative rainbow trout resource for harvest.	Yes	Yes	No
Avoid or minimize adverse environmental effects.	Yes. See Table 2	Yes. See Table 2	Yes. See Table 1
Complement activities of the fish and wildlife agencies and tribes.	Yes	Yes	Yes
Maintain consistency with the legal rights of CDA and appropriate tribes.	Yes	Yes	Yes

Chapter 3 - Affected Environment

3.1 Background

3.1.1 Description of the Project Area

Coeur d'Alene Lake lies within the 17,300 km^2 (10,380 mi^2) Spokane River drainage basin in northern Idaho (Lillengreen et al.1999). The majority of the lake is located in Idaho's Kootenai County, with the southernmost shore reaching into Benewah County. The city of Coeur d'Alene, Kootenai County's largest city, borders the north end of the lake. Other population centers in the area include the town of St. Maries, along the St. Joe River, and the town of Harrison, near the confluence of the Coeur d'Alene River with Coeur d'Alene Lake. The Tribe manages the southern third of Coeur d'Alene Lake, including the bed and banks. However, the land surrounding the Lake is predominantly in private and/or State ownership.

The target streams for the proposed fisheries enhancement activities are four tributaries of the Coeur d'Alene Lake system: Evans, Benewah, Lake, and Alder creeks.
Evans Creek is a third order stream located in Kootenai County, Idaho. Evans Creek is approximately 10 km (6 mi) long and discharges into Medicine Lake, a lateral lake hydrologically associated with the Coeur d'Alene River (see Figure 1). Predominate land uses in the Evans Creek basin include silviculture, grazing, and residential uses. The stream is used as a domestic and livestock water source.

Benewah Creek is a fourth order stream located in Benewah County, Idaho. Benewah Creek is approximately 10 km (6 mi) long and discharges into the southern portion of Benewah Lake, which has been joined with Coeur d'Alene Lake since the raising of the water levels associated with the development of Post Falls Dam (see Figure 1). Approximately 0.03 acres of wetlands have been delineated on Benewah Creek at the proposed project location. Grazing, timber production, and residential development are the main land uses within the stream's watershed.

Lake Creek is a third order stream located in southwest Kootenai County, Idaho and southeast Spokane County, Washington. Lake Creek is approximately 21 km (13.13 mi) long and discharges into Lake Coeur d'Alene at Windy Bay (see Figure 1). Over half of the watershed is forested land while the remainder is used for agricultural purposes. Lake Creek is utilized as a residential water source.

Alder Creek is a fourth order stream located in Benewah County, Idaho. Alder Creek is approximately 20 km (12.5 mi) long and discharges into the St. Maries River (see Figure 1). The proposed Alder Creek acclimation pond location includes about 0.04 acres of wetland. The major land use practices within the watershed are private and industrial timber production and livestock grazing. Alder Creek is also used as a livestock and limited domestic water source (Lillengreen et al. 1993).

The proposed site of the project's hatchery facilities is adjacent to Rock Creek, a stream that lies outside of the Coeur d'Alene Lake system. The site is near the headwaters of North Fork Rock Creek on the Coeur d'Alene Indian Reservation between the towns of Worley and Plummer, Idaho. Rock Creek flows westward for approximately 44 km (27.5 mi) and discharges into Hangman Creek in Spokane County, Washington. At the proposed hatchery site, the spring 2000 wetlands delineation identified approximately 0.64 acres of wetland. The hatchery facility would be located within the 100-year floodplain.

Potential sites for the acclimation ponds proposed for development on Benewah, Lake, Evans, and Alder creeks have been selected. Due to property ownership and legal considerations, some uncertainty still exists as to which four sites will actually be developed. It is assumed that the general existing information for the target watersheds provides sufficient detail to adequately address potential effects resulting from acclimation pond development.

A description of the region's climate, predominantly influenced by prevailing westerly winds carrying maritime air masses from the pacific coast, is available in the Idaho Panhandle National Forest Ecosystem Team report (1998). In general, this region is typified by winter "rain-on-snow" events that result in peak flows for rivers and streams. A number of factors influence the severity and frequency of these peak flows, including, morphology, aspect, and vegetative cover. Large openings in forested areas permit free air movement across the land and can accelerate the rate of snow pack depletion. Human impacts from logging, development, livestock grazing, mining, and agriculture have greatly contributed to increases in peak flow events. In the streams within the project area, these peak flow events contribute to bank erosion, increased turbidity and sediment loads, decreased fish habitat complexity, and may adversely affect salmonid fry and incubating eggs through the scouring of stream channels (Murphy 1995).

Extensive road development is yet another factor contributing to watershed degradation and peak flow events in the project vicinity. The area's road network includes five state highways, numerous county and municipal roads, and a widespread network of unimproved roads. Those areas with the highest road densities are found on lands managed primarily for timber production. Many of the roads initially constructed for timber harvest are now used mainly for recreational access while others have been abandoned and are no longer maintained. Furthermore, many of the roads have been developed in sensitive areas such as floodplains or on unstable land types, thereby increasing the potential negative impact on aquatic systems (CDA 1999). The potential impacts of the extensive road development in this watershed include current erosion rates that far exceed those under which the watersheds evolved, increased soil instability, and increased frequency of landslides to more than 300 times over conditions in an undisturbed forest (Murphy 1995). In addition, road culverts and bridges can block fish migration through: culvert outfall drops that are too great, lack of resting pools below culverts, blocking caused by debris or overtopping by peak flow events, and excessive water velocities (Meehan 1991). Studies have found that high road densities (approximately 2.5 km/km² (1.6 mi/mi^2) and higher) can adversely affect salmonid

populations. All of the project's target stream basins have road densities greater than 5 km/km² (Peters et al. 1999).

3.1.2 Westslope Cutthroat Trout Life History and Status in the Lake Coeur d'Alene Basin

3.1.2.1 *Historical Importance of Westslope Cutthroat to the Coeur d'Alene Tribe*

The fisheries resources of Coeur d'Alene Lake and its tributaries have been, and continue to be an important cultural resource of the CDA. Historically, both anadromous and resident fish species were a critical component of the Tribe's annual subsistence requirements, however, the anadromous fishery within the usual and accustomed areas of the Tribe has been lost since the early nineteen hundreds with the construction of dams across downstream reaches of the Spokane River (Scholz et al. 1985). With the anadromous fishery eliminated, the CDA depended even more heavily upon resident fishes including westslope cutthroat trout, *Oncorhyncus clarki lewis* from Coeur d'Alene Lake. Over the past fifty years, westslope cutthroat trout have suffered substantial population declines and in some streams, runs have vanished completely (Lillengreen et al. 1999).

3.1.2.2 *General Westslope Cutthroat Life History and Habitat Requirements*

There are three life history types of westslope cutthroat trout: adfluvial, fluvial, and resident, all of which can be found in the Coeur d'Alene Lake drainage. Adfluvial populations spawn in tributary streams and migrate to lakes for a period of growth, fluvial populations move between the mainstem of rivers and headwater streams, while resident populations remain in small headwater tributaries throughout their lives. The following life history description of westslope cutthroat trout was summarized from Ford (1995).

In streams on the Reservation spawning generally takes place in April and May with fry emergence occurring in mid- to late-July, dependent upon stream temperatures. Adfluvial juveniles may spend from a few months up to four years in their natal streams before migrating to lacustrine habitats. Resident trout may make minor migrations to access suitable winter habitat, but otherwise remain fairly localized. Cutthroat trout in lakes generally grow faster and attain larger sizes at maturity than those in streams. Westslope cutthroat trout mature between the ages of 2+ and 5+ years and usually live up to 7+ years. They are capable of repeat spawning; however, spawning mortality is sometimes as high as 50 percent.

Cutthroat trout are opportunistic feeders, consuming available invertebrates and are not known to be highly piscivorous. Past studies suggest that invertebrates are a preferred food item because cutthroat trout evolved with piscivorous bull trout *Salvelinus confluentus* and northern pikeminnow, *Ptychocheilus oregonensis*; therefore, feeding on insects and other invertebrates decreased competition with these species (Nakano 1998, Ford 1995).

Optimal river habitat conditions for westslope cutthroat trout have been described as clear cold water, a silt-free, rocky substrate in riffle areas, an approximate 1:1 pool/riffle ratio, areas of slow, deep water, well vegetated stream banks, abundant instream cover, and relatively stable flow and temperature conditions, as well as stabilized stream banks. Westslope cutthroat trout fry utilize areas with water velocities between 1.0 and 10.0 cm/s (0.4 and 4.0 in/s), while age 1+ and 2+ individuals generally inhabit areas with water velocities averaging between 10.0 and 12.5 cm/s (4.0 and 5 in/s) and a maximum of 22 cm/s (8.8 in/s). Optimal rearing water temperatures are between 10-13°C (50-55°F) for all life history types. Although, Hickman and Raleigh (1982) identified 12-15°C as an optimal temperature range for cutthroat trout. Dissolved oxygen concentrations in cutthroat trout habitat usually range from 9.0 – 11.5 mg/l, depending on elevation and temperature, with a minimum requirement of approximately 6.0 mg/l.

Cover is a very important habitat component for all westslope cutthroat trout life histories, especially for winter habitat in rivers and streams. Cutthroat trout prefer habitat with clean gravel and overhanging vegetation for cover; however, large rubble substrate is also used as cover. Areas with 15 percent cover for juveniles and greater than 25 percent cover for adults may be adequate for overwintering, but optimal conditions provide approximately 75 percent cover (Lillengreen et al. 1999, Ford 1995).

3.1.2.3 *Current Status of Westslope Cutthroat Trout Stocks and Habitat in the Project Area*

Both resident and adfluvial westslope cutthroat trout populations currently exist in Lake and Benewah creeks, while only resident populations are present in Alder and Evans creeks. During recent surveys conducted in the target tributaries cutthroat trout were classified as a species at risk due to low population numbers and habitat degradation (Lillengreen 1999). Furthermore, the USFWS had considered westslope cutthroat trout a candidate species for listing under the ESA, until an evaluation of the species' status led the agency to find that a listing was not warranted at this time (Federal Register 2000).

Cutthroat trout abundance and distribution patterns vary among the target watersheds and among years, and appear to be highly correlated to seasonal changes in water quality and quantity (Peters and Vitale 1999). Previous studies found that abundance of juvenile cutthroat trout is greatest in first and second order tributaries, suggesting a close link to spawning areas. Downstream displacement of rearing juveniles frequently occurs when summer stream flows approach zero in the principle spawning tributaries (Lillengreen et al. 1999).

Currently, westslope cutthroat trout populations in the target streams are thought to be at least moderately damaged and escapement limited (Peters et al. 1999, Peters et al. 1998). Average spawning escapements fall between the minimum viable population and the number of adults needed to produce 50 percent of the carrying capacity for the streams. Recent estimates of the number of individuals in target cutthroat trout populations range from 808 (Alder Creek) to 5,553 (Lake Creek).

The current instream habitat conditions within the target streams is thought to be a primary factor limiting westslope cutthroat trout production in the target basins. Low stream gradients contribute to fine sediment levels well above the optimal 5 percent for cutthroat trout (Lake Creek 19.1 percent, Benewah Creek 10.9 percent, Evans Creek 16.8 percent, Alder Creek 37.6 percent). Due in part to the high sediment compositions, the percent of potential spawning gravel in the target basins is low, ranging from 1.1 to 8.9 percent (Lillengreen et al. 1999).

Water quality throughout the project area has also been identified as a factor contributing to reduced cutthroat trout production. Average maximum water temperatures exceed desirable levels for cutthroat trout in Benewah Creek and lower Lake Creek. In all of the target watersheds except for Evans Creek and the mainstem of Benewah Creek, inadequate base flows likely displace rearing juveniles to downstream reaches or available pools, thereby, increasing competition for limited space and food. Furthermore, competition in pools may be heightened by the scarcity of pools within the target streams. The pool to riffle ratio for Lake, Benewah, Evans, and Alder creeks is below the optimal condition of 1:1, at only 1:3.6, 1:1.8, 1:10.6, and 1:1.2 respectively (Lillengreen et al. 1999).

Extensive timber production, agricultural activities, and grazing practices have degraded riparian areas throughout much of the project area. Because of this, vegetative cover in the target watersheds is well below the optimal conditions thereby contributing to higher summer water temperatures and increased potential for terrestrial species predation on cutthroat trout (Lillengreen et al. 1999).

Another important limiting factor for cutthroat trout production in the Coeur d'Alene Lake watershed is competition with introduced species, particularly brook trout. Brook trout have been found in Alder Creek and Benewah Creek. Studies have found that in streams where brook trout have been introduced, strong competition generally develops between brook trout and cutthroat populations, as they tend to utilize similar resources and habitat niches (Nakano et al. 1998). In many situations the native species decline in abundance and are often displaced from their historical range. This type of competitive exclusion is a likely cause of decline in cutthroat trout populations in Alder and Benewah creeks.

Conditions within Coeur d'Alene Lake itself also limit the production potential of cutthroat trout in the project area. Water temperatures in the upper 10 m (33 ft) of the water column in Coeur d'Alene Lake exceed the optimum temperatures for cutthroat trout, which alleviates cutthroat use of preferred habitat along the lake's margins. Sediment loading from tributaries in combination with large quantities of aquatic vegetation growth and low dissolved oxygen concentrations promote habitat conditions poorly suited to cutthroat trout (Peters and Vitale 1999).

It is also important to note that there is limited existing information for North Fork Rock Creek, the proposed site of the hatchery facilities. However, a fish survey conducted in the area revealed an absence of salmonid species. Rainbow trout were once present in the

stream, although, high water temperatures and inadequate flows restrict the current range of the species (Peters et al. 1999).

3.1.3 Other Fish Species in the Basin

Twelve native fish species are currently found within the Coeur d'Alene Lake basin: redside shiner *Richardsonius balteatus,* torrent sculpin *Cottus rhotheus,* shorthead sculpin *C. confusus*, speckled dace *Rhinichthys osculus,* longnose dace *R. cataractae,* longnose sucker *Catostomus catostomus*, largescale sucker *C. macrocheilus*, bridgelip sucker *C. columbianus*, mountain whitefish *Prosopium williamsoni*, and the previously mentioned northern pikeminnnow, westslope cutthroat trout, and bull trout (Lillengreen et el. 1999, Peters et al. 1999).

Bull trout in the Columbia River basin, including Coeur d'Alene Lake populations, were listed as threatened by the USFWS on June 10, 1998 (Federal Register 1998). Historically, the Coeur d'Alene Lake basin supported strong bull trout populations; however, populations have declined over the past century, as bull trout habitat requirements are even more stringent than those for westslope cutthroat trout. Instream habitat degradation, higher water temperatures in Coeur d'Alene Lake since the construction of Post Falls Dam, and introduction of exotic species have been major factors in the species' reduced populations (CDA 1999). Currently, bull trout are not thought to rear or spawn in Benewah, Alder, or Evans creeks. Population surveys over a nine-year period in Lake Creek found one adult, although, it is thought that the fish was only seeking temporary thermal refuge. With similar lower reach habitat conditions, it is possible that Benewah and Evans creeks could also be utilized by bull trout for temporary thermal refuge from conditions in Coeur d'Alene Lake, yet no instances of such uses have been documented (CDA 1999).

Studies suggest that westslope cutthroat trout and bull trout require the same basic habitat requirements, although, competition between the two species may be insubstantial as the two species tend to occupy dissimilar microhabitats. They are segregated along several habitat components including use of overhead cover, water column depths, and food sources (Nakano 1992). This type of resource partitioning and competition limitation is a crucial component that allows these two species to coexist.

Numerous introduced species also inhabit the Coeur d'Alene Lake basin including: yellow perch *Perca flavescens*, pumpkinseed sunfish *Lepomis gibbosus,* largemouth bass *Micropterus salmoides,* black crappie *Pomoxis nigromaculatus,* brown bullhead catfish *Ictalurus neblosus*, black bullhead catfish *I. melas*, channel catfish *I. punctatus*, tench *Tinca tinca,* northern pike *Esox lucius,* tiger muskie *E. lucius x E. masquinogy,* kokanee salmon *Oncorhynchus nerka,* chinook salmon *O. tshawytscha*, smallmouth bass *Micropterus dolomieui*, rainbow trout *O. mykiss*, and lake superior whitefish *Coregonis clupeaformis* (Lillengreen et al. 1999, Peters et al. 1999). The IDFG manages introduced species in Coeur d'Alene Lake. Kokanee salmon were introduced by IDFG more than 50 years ago. More recently illegal introductions of northern pike and chinook salmon have complicated the lake ecosystem. Current management direction provides for managing

population levels of these exotic species to provide for harvest opportunities while reducing potential interactions with adfluvial cutthroat trout. These exotic fishes have the potential to compete with, or prey upon cutthroat trout in Coeur d'Alene Lake.

3.1.4 Other Fish Management Activities Proposed for the Basin

In 1987, the Council amended the Columbia River Basin Fish and Wildlife Program and recommended that the BPA fund baseline stream surveys of tributaries located on the Coeur d'Alene Indian Reservation and provide recommendations on ways to improve the basin's fishery.

After numerous studies had been conducted in the area, in 1994, the Council adopted the recommendations set forth by the Coeur d'Alene Tribe to improve the Reservation fishery. The following recommendations represent a phased approach for restoration of the Coeur d'Alene Lake watershed fishery: 1) Implement habitat restoration and enhancement measures in Lake, Benewah, Evans, and Alder creeks; 2) Purchase critical watershed areas for protection of fisheries habitat; 3) Conduct an educational/outreach program for the general public within the CDA Reservation to develop a "holistic" watershed protection process; 4) Develop an interim fishery for tribal and non-tribal members of the reservation through construction, operation and maintenance of trout ponds; 5) Design, construct, operate, and maintain a trout production facility; and 6) Implement a five-year monitoring program to evaluate the effectiveness of the hatchery and habitat improvement projects (Lillengreen et al. 1999, Peters and Vitale 1999). The project alternatives described in Chapter 2, aside from no action, are designed to address numbers four and five above. The No Action Alternative addresses numbers one through three.

The CDA has set fishing guidelines designed to reduce harvest of cutthroat trout and eliminate harvest of bull trout, while providing exotic species harvest regulations geared toward reduction of predation and competition with native species. To further protect cutthroat populations, Benewah and Lake creeks are closed to all fishing year round (CDA 1999).

In addition to tribal management activities, the IDFG has maintained restrictive cutthroat trout harvest regulations since 1988. Beginning this year, IDFG further revised their policies to simplify the regulations and ease enforcement activities. The lake cutthroat trout season is open year round, however, there is a two fish limit, and no fish from 20 – 40 cm (8 –16 in) are to be kept. The stream cutthroat fishing season is from Memorial Day Saturday to November 30, and IDFG prohibits fishing in Wolf Lodge Creek (pers. comm. Ned Horner, IDFG).

IDFG supplements the naturally spawning chinook salmon stock at a level based upon kokanee salmon population estimates. The program is designed to limit kokanee populations through predation by chinook salmon, while preserving a recreational kokanee fishery. The purpose of this program is to minimize the impacts of both chinook salmon and kokanee salmon on native species, particularly cutthroat, by managing both species' populations (pers. comm. Ned Horner, IDFG).

IDFG also attempts to control the impacts of northern pike on native species by maintaining a liberal catch limit of five fish per day and a year-round season. This policy is meant to maximize harvest, thereby, reducing adverse impacts on native populations (pers. comm. Ned Horner, Idaho Dept. of Fish and Game).

3.2 Environmental Effects of the Proposed Action

3.2.1 Effects of Incubating, Rearing, and Releasing Cutthroat and Rainbow Trout

3.2.1.1 *Genetic Effects*

Two main genetic concerns are 1) the implications associated with removal of cutthroat trout from already diminished local populations for use as broodstock; and 2) loss of genetic variability through hatchery practices. Researchers from the University of Montana recently conducted a genetic analysis of westslope cutthroat trout in tributaries to Coeur d'Alene Lake (Knudsen and Spruell 1999). Results of this investigation demonstrated that trout from 16 different tributaries, including the four target streams, were genetically similar. These data support a scenario wherein, historically, one large population of westslope cutthroat trout existed in the basin and more recent fragmentation has resulted in smaller localized populations. The estimated rate of gene flow among populations is approximately seven individuals per generation based on past conditions (Allendorf and Phelps 1981). Although the current level of migration may be less since the number of migrants decreases in proportion to the reduction in population size. Nevertheless, sufficient migration has probably taken place in the recent past to prevent the loss of rare alleles (Knudsen and Spruell 1999). The authors recommended that the hatchery broodstock program for the tribal hatchery should incorporate broodstock from multiple sources but need not keep the individual tributary stocks isolated. Therefore, the impact to the small tributary populations from hatchery broodstock collection would be minimized.

The CDA Trout Production Facility Master Plan (Master Plan) (Peters et al. 1999) identifies the maintenance of the genetic integrity of the wild trout populations and minimization of genetic differences between hatchery and wild stocks as goals for the proposed hatchery program. The following facilities' operating principles would assist the Tribe in minimizing impacts from hatchery practices on the genetic integrity and biological diversity of native westslope cutthroat trout stocks. Additional detail can be found in Appendix D of the Master Plan (Peters et al. 1999).

- The facility would be designed and engineered to represent natural incubation and rearing habitat.

- Genetic and breeding protocols that are consistent with the local stock structure would be developed and applied.

- Large breeding populations would be used to minimize inbreeding effects and maintain genetic diversity.

- Artificial production strategies would mimic natural population parameters with respect to size, maturation, and migration timing.

- The program would avoid using strays for broodstock so as to avoid stock hybridization.

- Restoration of extirpated or weak populations would follow genetic guidelines to maximize the potential for re-establishing self-sustaining populations. Once restored, subsequent effort would concentrate on allowing selection to work, by discontinuing introductions.

- The program would use locally adapted or compatible broodstocks, and a corresponding reduction in the use of stock transfers from out-of-basin and non-endemic stocks.

The CDA proposes to operate the tribal hatchery using an adaptive management approach. Incorporating long term genetic and life history monitoring of hatchery and wild stocks into the hatchery monitoring and evaluation plan would allow CDA to ensure minimal genetic impacts of hatchery reared cutthroat trout on native populations.

Given that the hatchery rainbow trout would be reared at the facility on Rock Creek where there are no existing salmonid populations, and would not be released into the wild, there would be no genetic concerns associated with the rainbow trout component of the hatchery production as proposed.

3.2.1.2 *Ecological Interactions*

The primary ecological interactions of concern include fish disease issues associated with hatchery production, impacts to native fishes, habitat capability, and fisheries management considerations. The following paragraphs summarize these issues.

Rearing fish in a hatchery production facility is often associated with increased incidence of fish diseases. As the cutthroat trout broodstock would be collected from the wild they should be expected to have low levels of contamination. The water coming into the trout facility would be from ground water wells and surface water from Rock Creek. The egg incubation and early rearing troughs would receive well water that has been filtered with sand and ultra violet filters, as well as degassed and oxygen enriched. Cutthroat raceways and rainbow trout ponds would receive surface or well water that has been disinfected, oxygenated, and chemically adjusted as well as treated reuse water from early rearing troughs. Water that passes through the cutthroat trout raceways would be reused or eliminated via the effluent pond. Treated reuse water flows to the rainbow trout grow-out ponds and then leaves the system via the effluent pond and associated wetland.

Plans for maintaining the integrity of bioactive filters when applying standard disease or prophylactic treatments to broodstock, embryos, and/or juvenile trout would need to be developed.

Disease concerns would be heightened by the possibility of whirling disease or ceratomyxosis outbreaks associated with the rearing of rainbow trout. Although the rainbow trout ponds would be partially-lined, earthen bottoms make these potential sites for the alternate worm hosts of *Myxobolus cerebralis* and *Ceratomyxa shasta.* However, the rainbow trout would not be released into the wild, only into self-contained catch-out ponds, thereby, reducing the risk of widespread infection from rainbow trout. In addition, as Rock Creek does not have any existing salmonid populations, there would be no risk of spreading disease to them. There would be some risk of horizontal transfer of pathogens from the releases of cutthroat trout juveniles. Utilizing appropriate hatchery practices and release strategies would minimize this risk.

The cutthroat trout would be released as migratory juveniles into Lake, Alder, Evans, and Benewah creeks. Possible interactions with native fishes include bull trout currently listed as threatened under the federal ESA. Currently ESA listed bull trout do not rear or spawn in any of these tributaries. In addition, bull trout and cutthroat trout are thought to have evolved together and consequently utilize separate microhabitats. It is not probable that hatchery cutthroat trout would negatively impact bull trout populations. In fact increasing juvenile populations of cutthroat trout may enhance the food base for bull trout. Ongoing habitat enhancement activities should also provide benefits to listed bull trout populations.

As previously stated, listing of westslope cutthroat trout under the ESA was recently deemed unwarranted by the USFWS (Federal Register 2000). Despite this finding, the goal of the hatchery program is to conduct the hatchery and restoration operations in a manner that would maximize the beneficial effects and minimize the adverse effects on the naturally reproducing westslope cutthroat trout populations.

The proposed hatchery program is expected to operate to prevent super-saturation of available habitat. The current population levels and the capacity of available spawning and rearing habitat were incorporated into the determination of hatchery production goals. Thus, currently the primary habitat related concern is that the current habitat conditions would limit the success of the hatchery supplementation program. Extensive water quality issues such as increased rates of sedimentation, lack of vegetative cover, and elevated water temperatures can be found throughout the basin and in particular in the target streams and Coeur d'Alene Lake. These habitat associated limiting factors would need to be remedied to allow the hatchery program to succeed. The CDA is implementing habitat restoration and enhancement efforts in the creeks targeted for cutthroat trout release. In addition, they have targeted critical watershed areas for purchase, and are undertaking extensive education and outreach programs. In combination, these efforts should allow the development of a holistic watershed protection process. As the habitat restoration efforts come to fruition, it would be expected that the probability of success of supplementation efforts would also increase.

3.2.1.3 *Management Considerations*

The Proposed Action Alternative should provide positive benefits to fisheries management activities including an interim fishery for rainbow trout and the potential for long-term harvest opportunities with cutthroat trout. Currently, none of the westslope cutthroat trout populations on the CDA reservation are considered healthy (Peters et al. 1999). The populations targeted for supplementation are classified as 'degraded' and can not sustain harvest pressure. The rainbow trout produced as a component of the proposed hatchery program would provide an immediate fishery resource for the reservation public. Once cutthroat trout populations have recovered to 25 percent of targeted restoration levels, a harvest objective targeting 35 percent of the total return would be implemented. At this population level, the harvest will be restricted to hatchery trout only. Once the population has recovered to 75 percent of targeted levels, harvest will include hatchery and wild fish. Although a subbasin plan has yet to be developed for the area, it is anticipated that future subbasin planning would utilize supplementation of the depressed cutthroat trout stocks. In addition, it is anticipated that any harvest program would also consider these plans.

The IDFG management direction for regional cutthroat trout populations includes maintaining adfluvial populations with regulations that restrict harvest and continuing work with private landowners and agencies to identify and correct habitat problems (IDFG 1996). The current fishery for wild cutthroat trout in Coeur d'Alene Lake and its tributaries is not expected to impact the hatchery program (Bert Bowler, IDFG, Boise, ID). Two of the tributaries targeted for supplementation are currently closed to all fishing. The season was established such that hatchery reared juveniles are expected to have migrated out of tributaries prior to opening. In addition, current wild trout size limits are set at less than 20 cm (8 in) and greater than 40 cm (16 in). Hatchery-reared adults should be able to return to their natal tributaries and spawn at least once prior to being intercepted in the wild trout fishery.

3.2.2 Effects of Hatchery and Acclimation Pond Construction and Facilities Operation

Impacts associated with the construction and operation of the CDA trout hatchery and associated facilities would be expected to be short-term, minimal, and in some cases, benefits would occur to offset these impacts. Concerns and or potential benefits have been ascertained after several project interdisciplinary team meetings with participants from multiple natural resource agencies. For each resource area the concerns and or potential benefits are described in the following paragraphs.

3.2.2.1 *Water Quality*

Construction impacts on water quality should be of short duration and minimized. All construction activities would be kept out of riparian areas and wetlands to the maximum extent possible. The instream construction activity would occur with placement of the

hatchery intake structure in Rock Creek and the placement of intakes and outflows at the acclimation facilities. An erosion control plan will be developed and implemented. The CDA Tribe has applied for Treatment As State with the federal Environmental Protection Agency (EPA). As such, the CDA would have authority to assure that their actions and those of their contractors meet acceptable water quality standards and practices.

Hatchery operations would have water quality impacts to Rock Creek but would use best management practices and state of the art technologies to minimize these impacts. A National Pollutant Discharge Elimination System permit would be obtained and the hatchery would be operated within state and federal regulations. Water leaving the effluent pond would be filtered through an artificial wetland prior to reentering Rock Creek (see Section 3.2.2.3). The stream-fed acclimation ponds would be used for a period of several weeks during periods of high spring flow and would be stocked at extremely low levels of juvenile cutthroat trout (approximately 254 kg (565 lbs) per pond). The effluent levels at these ponds would be expected to be so low that regulatory permits would not be required. Given the timing of acclimation and anticipated loading of ponds, the effluent from acclimation ponds would have minimal effects on the temperature and nutrient load of associated steams.

Rock Creek flows currently as an intermittent stream with temperature and flow limitations. Temperatures in Rock Creek range from 4°C (39.2°F) in winter to as high as 25°C (77°F) in late spring. Usually in early summer flow has ceased in Rock Creek. Operation of the hatchery would provide benefit to this system by supplying Rock Creek with a year-round source of approximately 1.3 to 1.8 l/s (21 to 28 gpm) of 10-12°C (50 – 53.6°F) water and enabling the stream to flow year round.

3.2.2.2 *Water Quantity*

The proposed hatchery was designed to operate with a continuous water intake of 3.78l/s (60 gpm), 68.04 l/s (1,080 gpm) of water recirculating in the reuse system, and a continuous discharge of approximately 2.52 l/s (40 gpm). The hatchery would be operated using primarily well water with the possibility of supplemental surface water from Rock Creek during winter and spring. To minimize impacts of the wells on ground water aquifers the well water would be obtained using up to six wells located in up to two well fields from at least two aquifers. The impacts associated with the removal of Rock Creek water would be minimized as water would only be diverted during months of high flow and would be returned to the creek approximately within one mile downstream of the intake. The acclimation ponds would be operated with flow through stream water from each of the target tributaries. Because these ponds would be operated only during high flow periods, the diverted flows of 9.14-17.64 l/s (145 -280 gpm) should not impact these tributaries.

3.2.2.3 *Wetlands and Plant Resources*

Facility siting and construction activities would continue to be conducted to minimize adverse impacts to wetlands habitat and would be subject to regulations in accordance with an Army Corps of Engineers 404 permit. The hatchery would be sited upslope from a 0.64-acre wetland that was delineated by J-U-B Engineers, Inc. in the spring of 2000. Acclimation facilities would take up a small area 3 X 25 m (10 x 40 ft) and should be able to be sited so as to avoid wetlands and riparian habitats. Well No. 1 would be on the hatchery grounds. The exact locations of the other wells and associated pipelines have yet to be determined; however, the wells would be sited on private lands currently used for agriculture. The pipelines would leave these private holdings and travel along a railroad right-of-way or along a roadside to the hatchery facility. In constructing the individual components of the proposed facility, all attempts would be made to avoid sensitive wetland habitats. Total impact to wetlands would be less than one acre. Additional discussion regarding potential wetland effects and information regarding potential floodplain effects is presented in the floodplains/wetlands assessment prepared in accordance with Department of Energy regulations (see Section 4.11).

An artificial wetland consisting of two cells and approximately 3,960 m^2 (44,000 ft^2) would be constructed at the hatchery site. One 35.08 x 110.03 m (115 x 361 ft) wetland cell would be used to treat effluent to 20 mg/l biological oxygen demand (BOD) and one 9.14 x 30.48 m (30 x 100 ft) cell would be used to treat to 10 mg/l BOD. These cells would receive approximately 2.52 l/s (40 gpm) from hatchery effluent and would discharge between 113,550 – 151,400 l (30,000 and 40,000 gal) into Rock Creek daily. The project area provides potential habitat for three federally endangered plants the Utes-ladies' tresses, *Spiranthes diluvalis*, the water howellia, *Howellia aquatilis,* and Spalding's silene, *Silene spaldingi*. After informal consultations with Suzanne Audet (USFWS), it was determined that a habitat survey would be conducted in the spring of 2000 to evaluate the potential for habitat for these species in the project area. The initial habitat survey was conducted in April 2000. Based on a comparison of habitat types that would be affected by construction of the proposed hatchery and associated facilities and the habitat types considered likely to support the three target species, additional plant surveys are recommended for Utes-ladies' tresses at Benewah Creek, and Alder Creek and for Spalding's silene where the hatchery well water pipeline crosses conservation reserve program land. These surveys will need to be conducted this year later in the growing season when species identification is possible.

3.2.2.4 *Wildlife Disturbance and Habitat*

Construction activities would be expected to have minimal impacts to wildlife. Construction noise may temporarily disturb some wildlife species. Contractors would use noise shields to minimize this impact. Construction of the hatchery facility and acclimation ponds may displace some small mammals or birds that utilize these areas. Some of this impact should be offset by creation of an artificial wetland at the hatchery site and native plantings that would occur at the hatchery and acclimation facilities. No

impact would be anticipated on sensitive wildlife species or their habitats. Impacts to ESA listed wildlife species and their habitats will be addressed in a separate BA that is being prepared by CDA and will be available for attachment to the final EA.

Hatchery raceways and acclimation ponds may serve as an attractive nuisance to piscivorous wildlife, for example osprey, kingfisher, mink, and otter. The hatchery personnel would use standard techniques such as netting over ponds to deter such predators.

3.2.2.5 *Forestry*

There would be very little impact to forestry during construction of the hatchery facility and acclimation ponds. A total of 10 trees would be expected to be removed prior to construction.

3.2.2.6 *Air Quality*

The proposed hatchery facility and associated acclimation ponds would operate well within established limits for air quality standards and thus no impacts are anticipated.

3.2.2.7 *Socioeconomic and Other Social Impacts*

Cultural Resources. A spring of 2000 cultural resources survey, conducted by archaeologist Kevin Lyons, found no culturally significant resources within the project area (Lyons 2000). However, the report does explain that camas is present in some of the project wetland areas. Camas is a historical food source for the Coeur d'Alene Tribe and consultation with CDA would be conducted before modifying these areas to avoid loss of this traditional food source.

Consultation with the Idaho SHPO has been initiated and consultation with the Coeur d'Alene THPO would also be conducted prior to any ground disturbing activities. If during excavation and construction activities any cultural resources were discovered, operations would be halted immediately and a qualified archaeologist would be contacted to evaluate the area.

Public Safety. The proposed hatchery and associated facilities would comply with Occupational Safety and Health Administration (OSHA) standards for hazardous materials, waste storage, and ozone emissions.

Land Use and Zoning. The only land use change that would occur pertains to the hatchery site that is located on Coeur d'Alene Indian Reservation lands. No land would be removed from any tax base as a result of the proposed action.

Visual Aesthetics and Noise Disturbance. The facilities and accompanying structures would be designed to be low profile and complement the natural setting. After construction is completed the ground would be replanted and/or reseeded with native species. A monitoring program and remediation plan would be required for any noxious weed infestations.

Economics and Recreation. The proposed hatchery program is anticipated to have positive impacts for the local economy and should enhance local recreational opportunities. Two or three jobs should be created by this program. Trout fishing, and important economic resource for CDA, would be enhanced and would provide for increased revenues from fishing licenses as well as provide subsistence for tribal families.

3.3 Cutthroat Trout Only Hatchery Alternative

The Cutthroat Trout Only Alternative eliminates the incubation and rearing of rainbow trout at the proposed facility and associated rainbow trout rearing ponds. Catchable-sized rainbow trout would be purchased for direct release into catch-out ponds at several different locations. Thus, the environmental effects should be the same as those described for the Proposed Action Alternative. The only exception is that the potential for an outbreak of whirling disease or ceratomyxosis at the hatchery is significantly reduced with the elimination of the earthen ponds.

3.4 No Action Alternative

The No Action Alternative precludes supplementation of native cutthroat trout populations. As such there would be no environmental impacts associated with construction activities or the production and release of hatchery trout. The only actions remaining under this alternative are the ongoing habitat restoration and educational/outreach activities. These activities would be expected to have minimal, short-term impacts to the environment and would be far offset by the benefits of improved fish and wildlife habitat and educating the reservation public about watershed health.

Table 2. Summary of Environmental Impacts and Proposed Alternatives

Potential Impact	Proposed Action	Cutthroat Only Alternative	No Action
Genetic risk to existing distinct populations of native westslope cutthroat trout.	By utilizing large breeding population from multiple tributaries, potential impacts to distinct population segments would be minimized.	Same as for proposed action.	Current genetic pool would remain unaltered.
Disease related effects resulting from hatchery production.	Production of rainbow trout increases the potential for outbreaks of some diseases including, ceratomyxosis and whirling disease. Diverting all water from the hatchery's rainbow trout grow-out ponds to the effluent pond would reduce risks. Rainbow trout would only be stocked in self-contained ponds that would reduce the risks of widespread infection in the target tributaries. Minimal disease risks associated with the production of cutthroat trout.	By utilizing rainbow trout from existing facilities, disease risks would be only slightly higher than under the no action alternative, due to the production of cutthroat trout and the slight possibility of diseases being transferred from the rainbow trout catch-out ponds.	None
Capability of streams to complement the proposed artificial production program	Current habitat conditions may limit production potential, although subsequent phases of the CDA fisheries program should increase habitat production potential.	Same as for proposed action.	None
Effects of potential ESA listing of cutthroat trout on proposed action	On April 14, 2000 USFWS found that listing of westslope cutthroat trout is unwarranted at this time. Therefore, there is no longer a concern regarding the potential effect of listing on the proposed project.	Same as for proposed action.	None

Table 2. Summary of Environmental Impacts and Proposed Alternatives (cont.)

Impacts to local water quality and quantity	Potential short-term increases in sediment and turbidity during construction. Create a long-term benefit to Rock Creek by supplying approximately 60 gpm of 10-12ºC water year-round.	Same as for proposed action.	None
Impacts to wetlands	Total potential impacts to existing wetlands would be less than one acre. Hatchery development would produce artificial wetland.	Same as for proposed action.	None
Potential adverse effects to cultural and historical resources	Consultation with the Idaho SHPO is ongoing and all development will be conducted in a manner consistent with SHPO direction. Consultation with the CDA THPO will also be conducted.	Same as for proposed action.	None
Public safety concerns	Facility operations would comply with OSHA standards.	Same as for proposed.	None
Impacts to native fish from cutthroat trout releases	Potential risk for disease outbreak associated with rearing rainbow trout in earthen ponds. Should provide beneficial impacts to native cutthroat and bull trout populations.	Same as for proposed with reduced risk of potential disease outbreak.	None
Potential for noise and dust disturbances	During construction, measures would be implemented to reduce potential noise and dust disturbances. No such effects are anticipated through operation of the project facilities.	Same as for proposed action.	None
Adverse impacts to visual/aesthetic resources	Replanting would occur after construction activities and no adverse effects are expected.	Same as for proposed action.	None

Table 2. Summary of Environmental Impacts and Proposed Alternatives (cont.)

Land use or zoning changes resulting from implementation of the alternative	No zoning changes would be required and the facilities would be consistent with current land uses. Hatchery would be within 100-year floodplain.	Same as for proposed action.	None
Effects on proposed or listed species under the Endangered Species Act	Bull trout are listed as threatened. Cutthroat and bull trout evolved together in the basin and would be expected to coexist under the proposed project with inconsequential effects to bull trout populations.	Same as for proposed action.	None
Potential socioeconomic impacts	The hatchery would create 2-3 jobs and the rainbow trout program would increase recreation-based income in the area.	Same as for proposed action.	None
Effects on recreational resources in the project area	Increased over existing conditions due to the rainbow trout catch-out ponds and the increased potential for future cutthroat harvest opportunities.	Possible increase over existing conditions due to increased potential for future cutthroat harvest opportunities.	The recreational fishery would continue to operate with the current restrictions, which would not likely be lifted due to the uncertain recovery of cutthroat populations.
Potential air quality impacts	The facilities would operate within the limits of air quality standards.	Same as for proposed action.	None

3.5 Cumulative Resource Impacts

We have identified few activities planned or ongoing in the Coeur d'Alene River subbasin that would result in cumulative resource impacts. The potential cumulative impacts that may arise are listed below.

- Future timber sales and production activities in the forested areas of the upper watersheds could lead to further degradation of habitat in targeted streams.

- Road closure and habitat restoration activities in National Forest areas and on private lands could help to reduce sediment loads in targeted streams.

- Enhancement of native populations of westslope cutthroat trout could lead to reduced fishing regulations and increased recreational opportunities.

Chapter 4 - Consultation, Authorization, and Permit Requirements

4.1 National Environmental Policy Act (NEPA)

This EA document was prepared in accordance with the NEPA and its implementation regulations, including Department of Energy implementation procedures (10 C.F.R. 1021), to ensure that project development would be conducted in a manner consistent with the intent of the law.

4.2 Threatened and Endangered Species and Critical Habitat

The ESA (16 U.S.C. 1536) mandates the protection and recovery of threatened and endangered species and their habitat. The law is implemented through a process of identifying and listing species in risk of extinction, development of species recovery plans, and placement of prohibitions on activities that could adversely affect listed species or the habitat upon which they depend.

Under Section 7 of the ESA federal agencies must consult with USFWS and National Marine Fisheries Service (NMFS) to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of proposed or listed species or the their habitat. The potential effects of the proposed project on bull trout are described in Section 3.2.1.2. As was described in Section 3, bull trout in the Coeur d'Alene Lake basin are listed as a threatened species by USFWS.

The CDA is preparing a biological assessment for the proposed project and will consult with USFWS in compliance with the ESA. In addition to bull trout, the BA will include bald eagle (*Haliaeetus leucocephalus*), Canadian lynx (*Lynx canadensis*), Ute ladies'-tresses (*Spiranthes diluvialis*), Spalding's silene (*Silene spaldingii*) and water howellia (*Howellia aquatilis*). Consultation with NMFS is not expected to be required, as downstream dams preclude anadromous fish species from accessing the Coeur d'Alene Lake watershed.

4.3 Fish and Wildlife Conservation

Provisions of the Pacific Northwest Electric Power Planning and Conservation Act (16 U.S.C. 839 et seq.) are intended to protect, mitigate, and improve conditions for fish and wildlife of the Columbia River and its tributaries. This project is designed to enhance the Coeur d'Alene Lake watershed fishery and would be compatible with the goals of the Act.

The Fish and Wildlife Conservation Act of 1980 (16 U.S.C .2901 et seq.) encourages federal agencies to conserve and to promote conservation of non-game fish and wildlife species and their habitats. None of the activities associated with the proposed action are likely to adversely affect non-game fish and wildlife species.

The Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) requires that federal agencies consult with the USFWS whenever an agency plans to conduct, license, or permit an activity involving the impoundment, diversion, deepening, control, or modification of a stream or body of water. Consultation with the USFWS is ongoing and will continue to ensure that project development would be conducted in a manner consistent with applicable fish and wildlife protection regulations.

4.4 Permit for Discharges into Waters of the United States

Under authority of Section 404 of the federal Clean Water Act (33 U.S.C. 1344), the Army Corps of Engineers is authorized to issue permits for the discharge of dredged or fill material into waters of the United States at specified disposal sites. As the law is interpreted, wetland areas are considered waters of the United States and are subject to Section 404 requirements. The wetland delineation for the proposed project was completed in the spring of 2000 with approximately 0.7 acres of wetlands identified within the project area. Dredging or filling would be avoided when possible within these wetlands. CDA will consult with the Army Corps of Engineers to negotiate a Section 404 permit for any dredging or filling that may occur in wetland areas or within the ordinary high water mark of project streams.

4.5 Water Quality Certification

Water Quality Certification under Section 401 of the Clean Water Act is administered at the state level by the Department of Environmental Quality (DEQ). The purpose of Section 401 is to ensure that projects resulting in discharges to waters of the state adhere to the Clean Water Act and state water quality standards. BPA and the Tribe would negotiate 401 Certification with DEQ both for the construction and operation of the project facilities.

4.6 National Pollutant Discharge Elimination Systems (NPDES)

The Clean Water Act requires that all point sources discharging pollutants into waters of the United States must obtain a NPDES permit under authority of the EPA. By point sources, EPA means discrete conveyances such as pipes or man made ditches. In the state of Idaho, EPA has delegated authority for permit issuance to DEQ. The proposed project would require a NPDES permit for operation of the hatchery facilities. Negotiations for the NPDES permit would begin once final designs for the proposed facilities had been completed.

4.7 Heritage Conservation

Federal historic and cultural preservation acts include the National Historic Preservation Act, the Archaeological Resources Protection Act, the Archaeological and Historic Preservation Act, the Native American Graves Protection and Repatriation Act, the American Antiquities Act, and the American Indian Religious Freedom Act. To ensure compliance with applicable regulations, consultation has been initiated with tribal representatives and the SHPO.

4.8 Resource Conservation and Recovery Act (RCRA)

This statute's primary intent is to protect human health and the environment through regulation of hazardous waste management, treatment, and disposal. These topics are discussed in Section 3.2.2.7. The proposed project would be in compliance with RCRA as it is not likely to store or generate any hazardous wastes, as defined by the law (42 U.S.C. 6901 et seq.). If hazardous wastes were generated, they would be documented, packaged, and shipped to an approved disposal location in accordance with applicable regulations (40 C.F.R. 260-268, 40 C.F.R .270-272).

4.9 County and Local Plan and Program Consistency

A tribal legal review committee evaluated the project to assess the level of permitting that would be necessary for the hatchery project. It was determined that no county or local permits were required for this project that would be developed on Coeur d'Alene Indian Reservation lands and waters. However, the project would be conducted utilizing best management practices to reduce potential adverse environmental impacts and should be consistent with county and local management plans and programs.

4.10 Recreation Resources

The majority of the land at the proposed hatchery, acclimation pond, and rainbow trout pond sites is currently used for either agricultural or timber production purposes. Construction of the hatchery, acclimation ponds, and rainbow trout ponds would limit potential recreational use in the immediate development area; however, substantial recreational use at the proposed site locations has not been identified. Therefore, no adverse impacts associated with project construction are expected.

Furthermore, the rainbow trout ponds would create a recreational benefit through providing angling opportunities surpassing those available under existing conditions. The fisheries restoration efforts associated with this project are designed to strengthen native cutthroat populations to a harvestable level in the years to come, thereby, providing potential increased recreational angling opportunities as well as nature

watching as numbers of adult trout spawning in the wild begin to increase. In addition, the hatchery and associated interpretive center would provide opportunity for public viewing and education.

4.11 Floodplains and Wetlands Assessment

Executive Order 11988 was established requiring all federal agencies to avoid adversely impacting floodplains wherever possible. The BPA accommodates the requirements of Executive Order 11988 through USDOE NEPA procedures. In accordance with the USDOE's regulations on Compliance with Floodplains/Wetlands Environmental Review Requirements (10 CFR 1022.12), BPA has prepared the following assessment of the impacts of the Proposed Action Alternative on floodplains and wetlands.

Project Description. A detailed project description is presented in Section 2.1.

Floodplain Effects. To minimize the effect on the floodplain capacity, intake and discharge pipes, as well as the raceways, effluent ponds and acclimation ponds, would be installed at or below ground level. As such, these structures will not alter the floodprone width, nor would they change the effective channel dimensions. The affected streams would retain the ability to transport the water and sediment delivered by their respective watersheds without resulting in aggravation or degradation of the stream channel. The construction of the central incubation facility (garage, hatchery building, fully equipped shop, outside residence and other equipment and supplies to operate a standard fish culture facility) would not result in any compounding of flooding in the adjacent floodplain, as these structures are located outside the floodprone area.

The primary concern with the flood potential at each acclimation site and raceway is that cutthroat trout could be released prematurely, with the potential for increased predation on these fish due to their relative small size compared to the other fish species. Downstream migration during flood events is a natural behavioral trait of these fish; thus it is unlikely that any negative impacts to the native fish community would occur due to flooding of the acclimation sites. The integrity and or infrastructure at all sites would not be at risk as a result of flooding. Thus premature release of cutthroat trout could only occur during the highest flood events overtopping the acclimation ponds.

Furthermore, county authorities and FEMA would be contacted to ensure that any new construction would meet County and FEMA regulations. Certain design restrictions or limitations may apply. If facilities were located within the floodplain, they would be designated to withstand flooding. Overall, the proposed project activities would not adversely affect human life, property, or natural floodplain values.

Wetland Effects. Activities in wetlands are regulated under the Clean Water Act. Site investigations (see Section 3.2.2.3) were conducted to identify and map wetlands that may be present on the proposed sites. Three wetland areas were identified. Due to the very small size of the wetlands and the ability to avoid or minimize effects on these wetlands, only minor potential loss or disturbance is anticipated. Prior to construction, consultation with the US Army Corps of Engineers would be completed and a Section 404 permit would be obtained.

Alternatives. By the nature of the proposed facilities, there are no alternatives, which require additional locations within floodplains or wetlands.

Chapter 5 - References

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Chapter 7 - Glossary

acclimation: the process of adapting an organism to a natural environment through exposure.

adfluvial: spawn in tributary streams and migrate to lakes for a period of growth.

anadromous: fish species that migrate from fresh to salt water where young spend most of their adult life in the ocean, and then return to their ancestral drainage to spawn.

angling: fishing, with usually hook and line.

aspect: a position facing in a particular direction.

broodstock: fish stock used for reproduction, generally in a hatchery setting.

captive rearing facility: hatchery facility that incorporates collection of juveniles from wild stocks are reared and spawned in captivity.

ceratomyxosis: attacks virtually all tissues in trout, lesions can occur almost anywhere, causing the intestinal walls to thicken. These parasitic sport become increasingly numerous with increasing water temperatures, and trout become infected by eating the spores in the water. There is little that can be done to prevent wild trout from becoming infected by this myxosporidian when water temperatures are high.

effluent: an outflow of waste.

fingerling: a small fish up to one year of age.

stream order: a system for classifying streams based on.

fluvial: move between the mainstem of rivers and headwater streams.

genetic variability: variation in the genes of a population.

lacustrine: living or growing in lakes.

morphology: the structure and form of living organisms.

natal streams: stream of origin.

non-edemic stocks: stocks not naturally occurring in the area of interest.

ozonators: introduce O_3 (ozone) into an aquatic environment.

piscivorous: habitually feeding on fish.

resident: fish that are permanent inhabitants of a body of fresh water and do not migrate long distances from the area (compare with anadromous fish).

riparian: growing or living on or adjacent to the banks of streams and rivers.

subbasin: geographically defined area in which all of the land is drained by a specific river and its tributaries, and is a subset of a basin.

stream order: a system for classifying streams based on stream branching. A first order stream would have no branches entering it.

silviculture: the practice of growing trees for commercial harvest.

terrestrial: consisting of land or living on land.

turbidity: an indicator of the amount of sediment suspended in water. It refers to the amount of light scattered or absorbed by a fluid. In streams or rivers, turbidity is affected by suspended particles of silts and clays, and also by organic compounds like plankton and microorganisms.

volitional release: a strategy for release of hatchery reared fish that allows the fish to choose when to leave the captive environment.

whirling disease: attacks the cartilaginous tissues and infected fish usually show blackened tails and "whirling" swimming movements at the surface of the water. Trout become infected when they eat contaminated fish or the intermediate host, tiny worms. In the wild, trout have virtually no protecting if they continue to eat infected worms. Brown trout apparently are more resistant to the disease than are brook trout or rainbow trout, and there is no known cure.